



## 12 Points that Explain the State of the WTE Market



Jul 16, 2015 | **David Bodamer** and **Megan Greenwalt**

In June, the Babcock & Wilcox Company, a clean energy technology and services provider for the nuclear, fossil and renewable power markets based in Charlotte, N.C., announced the grand opening of the Solid Waste Authority of Palm Beach County's waste-to-energy (WTE) facility in West Palm Beach, Fla.

"The completion of this state-of-the-art facility represents the culmination of a 10-year effort that virtually ensures to the taxpayers of Palm Beach County that their solid waste will be disposed of in the most efficient and environmentally sensitive method available in the world today long into the future," Ray Schauer, SWA director of engineering and public works, said in a statement.

As this new WTE facility comes online, it is an opportune time to review the state of WTE in the United States.

This week brought other key industry news with the Robert "Bob" C. Boucher Jr. officially stepping in as president and CEO of Hampton, N.H.-based Wheelabrator Technologies. Boucher succeeded Mark A. Weidman, who retired after 25 years with the company.

Here's a look at some of the key information on the sector.

### **1. There are currently 85 WTE facilities in the U.S.**

There are 85 waste-to-energy facilities in 23 states according to the Energy Recovery Council. Four facilities are inactive. (There were 102 facilities in 2000, according to the EPA.)

The nation's waste-to-energy facilities process in excess of 30 million tons of trash per year, sell more than 14.5 million megawatt hours to the grid, and recover more than 730,000 tons of ferrous metals for recycling. In addition, many facilities sell steam directly to end users offsetting the use of fossil fuels to make that energy.

### **2. The first new facility in 20 years just opened.**

The Palm Beach Renewable Energy Facility 2 has three mass-burn, WTE boilers that can generate up to 95 megawatts of electricity. As measured by energy generation capacity, it is now the largest such facility in the United States. Moreover, it's the first ground-up waste-to-energy facility to open in the U.S. in 20 years.

### ***3. Florida has the greatest number of facilities.***

With the opening of the new Palm Beach Renewable Energy Facility 2 in West Palm Beach, the state has 12 WTE facilities. Overall 11 states have three or more facilities. New York (10), Minnesota (9) and Massachusetts (7) have the most facilities aside from Florida.

### ***4. WTE use is driven by legislation and geography.***

Generally states that define WTE facilities as renewable energy have WTE facilities while those without WTE laws on the books do not. Of the 23 states with WTE facilities, 21 count the technology as renewable. Only New Hampshire and North Carolina have facilities without WTE counted as renewable. On the flip side, 10 states that count WTE as renewable energy do not contain any WTE facilities.

The other determining factor is geography. WTE facilities are more prevalent in the parts of the country where there are fewer landfills. Nearly half of the WTE facilities in operation are in the Northeastern U.S. In contrast, the region has the fewest landfills.

### ***5. Mass burn is the most popular technology.***

Overall, 62 operating facilities (and three inactive ones) employ mass burn technology which allows municipal solid waste (MSW) to be combusted without pre-processing. An additional 13 facilities utilize refuse derived fuel (RDF) which is pre-processed municipal solid waste. Six active facilities (and one inactive) utilize modular combustion units which are similar to mass burn, but are typically smaller and pre-fabricated.

### ***6. Most facilities produce electricity, but some produce steam.***

With the addition of the Palm Beach facility, 63 facilities are set up to produce electricity for sale to the grid as the only energy product. Four facilities can export steam without any electric generation. Lastly, 18 are cogeneration plants, which export steam to end users and also have the ability to generate power.

### ***7. WTE facilities are generally privately operated but nearly half are publicly owned.***

Overall, 41 facilities are publicly owned by solid waste authorities while 44 are privately owned. However, the majority of facilities are privately-operated. Covanta Energy and Wheelabrator Technologies are the largest players in the WTE market. Covanta operates 40 facilities. Wheelabrator operates 16.

### ***8. Almost all WTE facilities in the U.S. were built in the 1980s.***

The oldest current facility in the United States is the Susquehanna Resource Management Complex in Harrisburg, Pa. It began operation in 1972 and was retrofit in 2006. It is a mass burn facility with a gross energy capacity of 20.8 megawatts. Two more facilities opened in 1975.

But the majority of the 85 facilities—56 in all—came online during the 1980s. The peak years for WTE's commencing operation were 1987 (12), 1988 (16) and 1989 (12). An additionally 16 started operation in 1990 and 1991 combined. But then the industry declined with just three facilities each year coming online in 1992, 1994 and 1995. After that there was a 20-year gap before the Palm Beach Renewable Energy Facility 2 began operation in June.

### ***9. WTE facilities handle 13 percent of the MSW stream.***

According to the EPA, 32.66 million tons of waste was combusted in 2013, the most recent year for which figures are available. That represented 12.9 percent of the MSW stream in the U.S.

That figure includes approximately 29.5 million tons of municipal solid waste, 510,000 tons of wood and 2,650,000 tons of tires. That was a slight increase over the 32.2 million tons of waste combusted in 2012.

***10. WTE use peaked in the early 2000s, but is on the rise again.***

According to the EPA, “MSW combustion with energy recovery increased substantially between 1980 and 1990 (from 2.7 million tons in 1980 to 29.7 million tons in 1990). From 1990 to 2000, the quantity of MSW combusted with energy recovery increased over 13 percent to 33.7 million tons. After 2000, the quantity of MSW combusted with energy recovery has remained between 29.0 million tons and 32.7 million tons (12.9 percent of MSW generation in 2013). Discards sent for combustion with energy recovery were 0.57 pounds per person per day.”

***12. WTE facilities are popular in Europe.***

There is less space for landfills in Europe, which has led to more aggressive pursuit of waste diversion strategies. When it comes to WTE, there were 456 facilities in 21 countries as of 2012, according to the Confederation of European Waste-to-Energy Plants. France (128), Germany (80) and Italy (46) account for more than half of that total. Germany (23.5 million tons) and France (15.0 million tons) process the greatest volume of waste in WTE plants.

In the EU 28 nations plus Switzerland, Norway and Iceland, 26 percent of the MSW stream is incinerated. Estonia (64 percent), Norway (58 percent), Denmark (54 percent), Sweden (50 percent), the Netherlands (49 percent) and Switzerland (49 percent) have the highest percentage of MSW going to incineration.

***Sources: The 2014 ERC Directory of Waste-to-Energy Facilities, Advancing Sustainable Materials Management: Facts and Figures 2013, Confederation of European Waste-to-Energy Plants***